Ann. Natal Mus. Vol. 25(1) Pages 123-141 Pietermaritzburg October, 1982

Mabhija: pre-colonial industrial development in the Tugela Basin

by

Tim Maggs
(Natal Museum, Pietermaritzburg)

SYNOPSIS

The Mabhija area contains the largest concentration of iron-working sites yet known in Natal. One site with its double furnaces is described in detail. The iron smelting dates to the latter part of the Iron Age and, through oral history, it can be linked with an Nguni group of the pre-colonial era.

INTRODUCTION

As part of a long-term research project on Iron Age settlement and subsistence patterns of the Tugela Basin a number of iron-smelting sites have been visited and recorded. The greatest concentration of such sites is in the Mabhija area, 20 km down the Tugela River from Colenso, which was brought to our attention when Mrs N. Blewitt sent smelting material to the Natal Museum. The area was investigated in 1975 and limited excavations were carried out on one of the smelting sites. The results are described in this paper.

The aims of the work were to provide information on the environmental, cultural and historical contexts of the sites, as well as on the methods used in the production of iron artefacts. As no previous archaeological work had been done on iron working in Natal, the whole process from extraction of the ore to the trading of finished products required attention. The furnaces are of a type that had not been recorded previously, although subsequent work has shown them to be widespread in the Tugela Basin and farther north, where Hall (1980) has described essentially similar examples from the Hluhluwe Game Reserve in Zululand.

THE AREA

Mabhija is the name of a stream running eastwards to join the Tugela on the farm Gannahoek 1817 (Fig. 1), just below the confluence with a major tributary, the Klip River. This part of the Tugela Basin, between Colenso and the confluence with the Msuluzi (Bloukrans), a distance of some 35 km, is a particularly broken belt of country. The Tugela itself flows over a series of waterfalls and it runs in a deeply incised and steep-sided valley (Fig. 2).

The terrain is rocky with few patches of soil suitable for cultivation. These are largely restricted to the rare flattish areas of the valley bottoms where relatively rich calcareous soils of the Sunvalley–Ferry–Weenen group occur. One of the main patches occurs at the Mabhija–Tugela confluence (Van der Eyk *et al.* 1969). Thin soils have developed on some of the flatter uplands, but in both situations they are prone to erosion. In addition the low rainfall of around 700 mm per

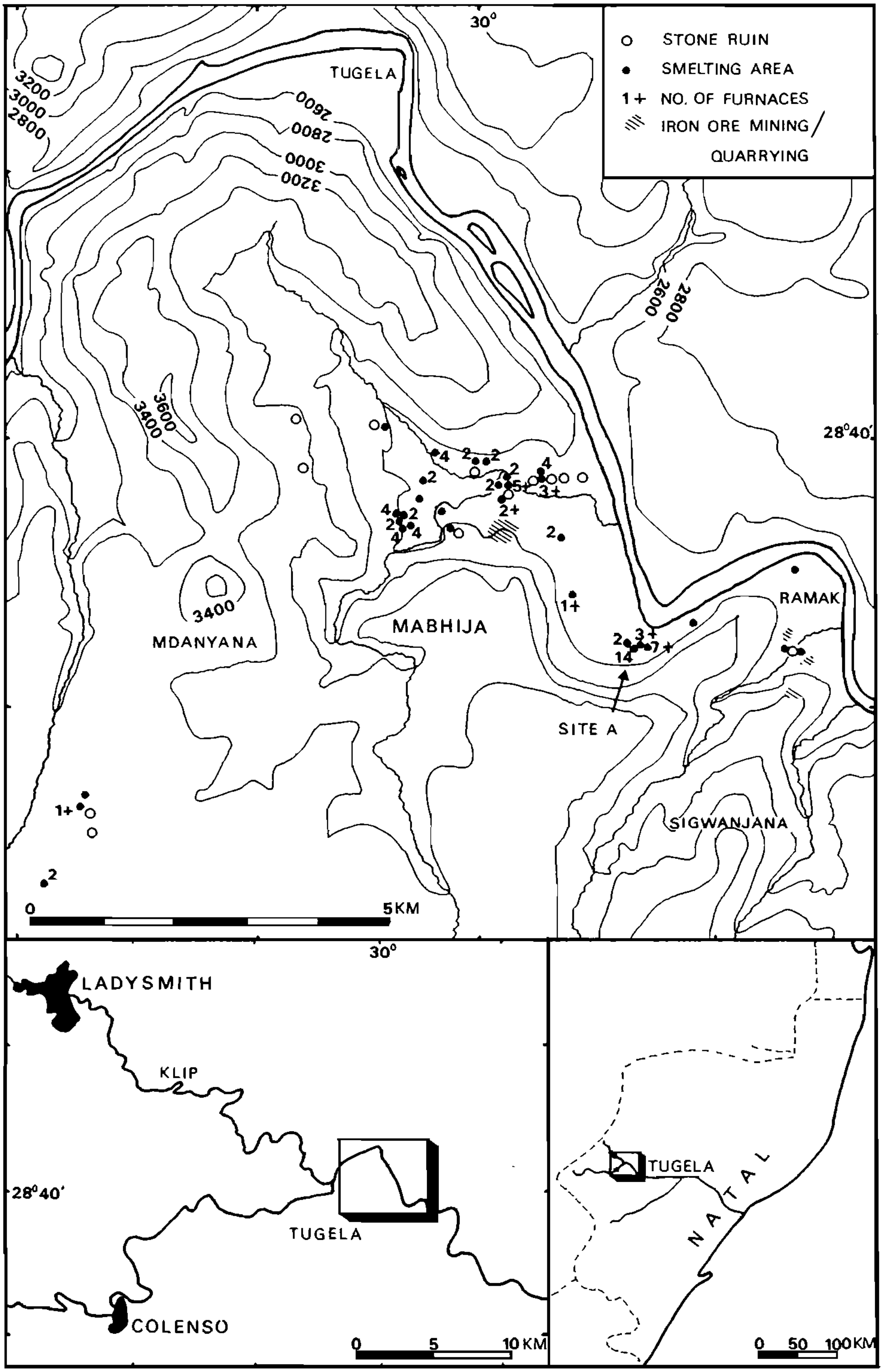
○ STONE RUIN
● SMELTING AREA
1+ NO. OF FURNACES
▨ IRON ORE MINING/QUARRYING
30°
TUGELA
3200
3000
2800
2600
3600
3400
28°40'
MDANYANA
MABHIJA
SITE A
RAMAK
SIGWANJANA
0
5KM
LADYSMITH
KLIP
TUGELA
COLENSO
10KM
NATAL
50
100KM

Fig. 1. Map of Mabhija area. Contours are in feet.

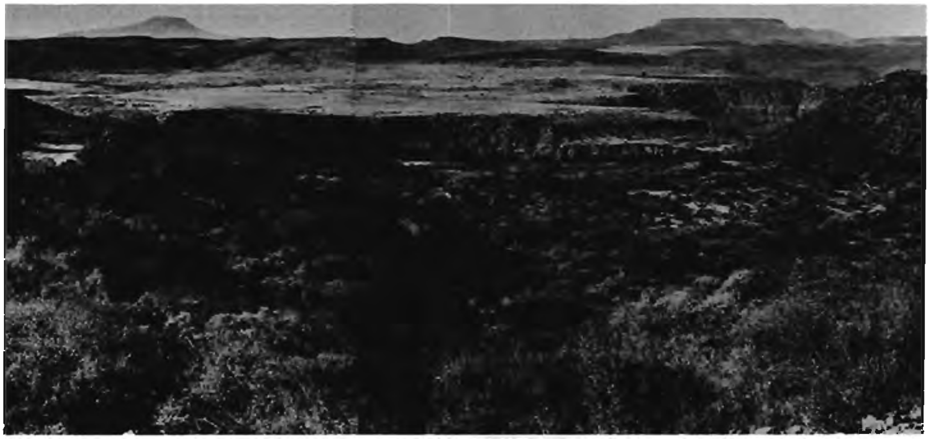

Fig. 2. View over the Mabhija valley and across the Tugela from Mdanyana, looking eastwards. Note the bushy vegetation and dissected landscape. On the horizon are two prominent mountains of the central Tugela Basin, to the left Lenge (Job's Kop after Jobe Sithole, chief during Shaka's reign), to the right Mhlumayo.

annum and the incidence of drought makes crop growing unreliable as a staple activity. Certainly it could not have supported a dense population in this area.

The natural vegetation consists of a tongue of mixed bushveld, the *Acacia–Boscia–Olea–Schotia* dominated Semi-deciduous Bush, running up the Tugela, with *Acacia karroo–A. nilotica* Thorn Veld on the higher ground (Edwards 1967). The latter in turn gives way to open grasslands west of Colenso. The tongue of Semi-deciduous Bush includes relatively tropical species such as *Spirostachys africana* (tamboti) and *Sclerocarya caffra* (marula) and marks the inland limit of such species within the Tugela Basin. There is a greater variety of woody species, as well as denser tree growth than in the neighbouring thorn scrub. The understory of both vegetation types is sweet grassveld, although grass cover increases and becomes more sour with increasing altitude and progression towards pure grassland. Within the Semi-deciduous Bush, though the grazing is nutritious throughout the year, it is sparse, particularly on the rocky slopes. It can support only a low density of grazing stock—cattle and sheep—and is more suited to goats. From the point of view of the staple economic activities, cultivation and herding, it is clear that this environment would not have been an attractive one to Iron Age settlements.

The explanation for the pattern of dense settlement must lie largely in the combination of the wooded environment and the geology. The local Middle Ecca 'coal measures' consist of alternating bands of sandstones and finer grained sedimentaries among which both coal and iron ore occur. The formations are typical of deltaic deposits—the often thick but not very extensive sandstones deriving from sandbars (Hobday 1973). The sedimentary iron ore often occurs in the form of siderite (ferrous carbonate—$FeCO_3$) but calcareous or dolomitic ironstone, hematite and limonite are also known, as well as hard magnetite which has resulted from contact metamorphism (Coetzee 1976). It occurs as thin lenses of restricted lateral extent, although in northern Natal the larger examples, up to a metre or more thick, have been commercially exploited at times in this century for both smelting and pigment. Although deposits are small by modern requirements the ore is of good quality.

Several outcrops of iron ore were visited and others are known to local informants. The largest workings are on the southern side of the Mabhija valley about 1,5 km from the Tugela (Fig. 1). Here an extensive area of quarrying is visible with piles of sandstone rubble beside bare sheets of sandstone. Although no ore was seen *in situ* it was apparently a lense about 7 cm or more thick and of good quality judging by loose pieces of ore collected nearby. A little upslope from the quarrying where the ore is deeper underground, at least two shafts were sunk through a thick bed of sandstone. The best preserved of these is about 2 m in diameter but largely filled with rubble, so its depth is unknown (Fig. 3). Shaft mining for iron ore appears to be very unusual in southern Africa.

A second outcrop was examined on the farm Ramak, a short distance down the Tugela (Fig. 1), where quarrying had taken place on either side of a small stream bed. To the north a siderite lense, about 15 cm thick, was still visible beneath a shallow overburden. The ground had evidently been disturbed over a distance of about 20 m by the stripping of overburden—a pale soil with calcareous nodules—which was piled in low banks. To the south several large pits in deep calcareous soil were apparently dug to exploit the same lense. Between the two are the remains of a settlement with two smelting areas. On the slopes of Sigwanjana just to the south is another outcrop of poorer quality ore that appears to have been quarried. According to informants there are other sources of ore in the general area.

The numerous smelting sites consist of scatters of smelting debris—slag, tuyères and furnace fragments—together in most cases with truncated furnaces. The area is heavily eroded and some sites have been almost completely destroyed. The frequent occurrence of stone enclosures, usually a single circle, adjacent to smelting areas suggests that they are often associated. That the building of stone stock enclosures, graves, etc. continued down to recent times was confirmed by several informants. It was also noted that several of the contemporary *imizi* (homesteads) visited had incorporated older stone enclosures of unknown age. It is therefore probable that some of them are on the sites of pre-colonial settlements.

The concentration of smelting sites in the Mabhija valley and immediately to the south at Site A (Fig. 1) can probably be attributed to the outcrop of ore, as well as to the patch of good agricultural land at the Tugela–Mabhija confluence. A similar pattern of location would apply to the Ramak settlement. Sites on higher ground may be more scattered, as is suggested by groups in the south-west corner of the map (Fig. 1). There are certainly many more to be found in the neighbourhood, as well as farther afield in this part of the Tugela Basin.

A prominent feature of the furnaces is that they are almost invariably built in pairs. Sometimes the pairs are arranged in rows of four or even six furnaces. The number of furnaces per smelting area is shown in Fig. 1, a plus sign indicates examples where the original number is uncertain due to severe erosion. With these exceptions all sites have an even number of furnaces. This has been observed elsewhere in the Tugela Basin and farther north in Zululand as well (Hall 1980), but it is evidently not the case in other regions of southern Africa.

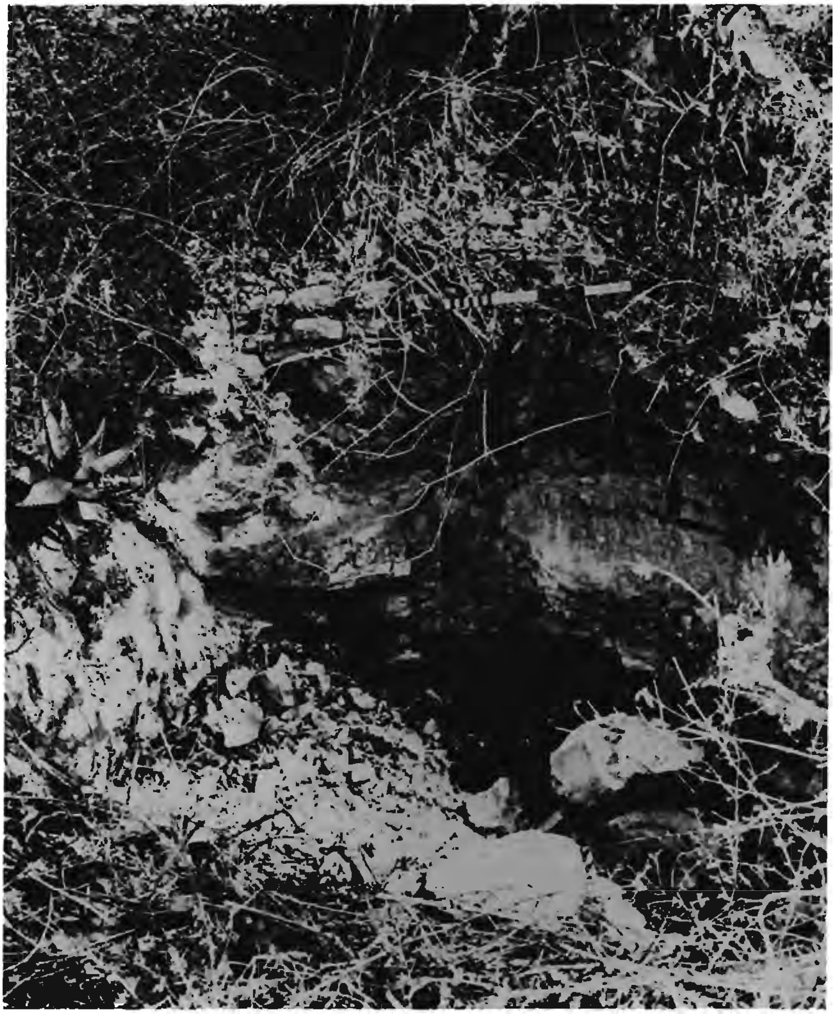

Fig. 3. Shaft of iron-mine sunk through sandstone overburden. Present diameter is about 2 m, depth is unknown, as the shaft is clogged with rubble.

SITE A

Three hundred metres south-west of a sharp bend in the Tugela is the largest concentration of furnaces and among them some of the best preserved examples. The site is on a colluvial pediment backed by cliffs and a steep mountain-side (Fig. 4). The pale sandy colluvium has been severely eroded by gullies, one of which bisects the site, as well as sheet wash. Vegetation is essentially secondary (aloes, acacia scrub and *Blepharis natalensis*) with some relict *Boscia* and *Spirostachys*.

The site consists of four groups of furnaces, each with a scatter of smelting debris (Fig. 5). There are in addition several areas of ashy material with pottery and a little bone, but less in the way of slag, broken tuyères and furnace

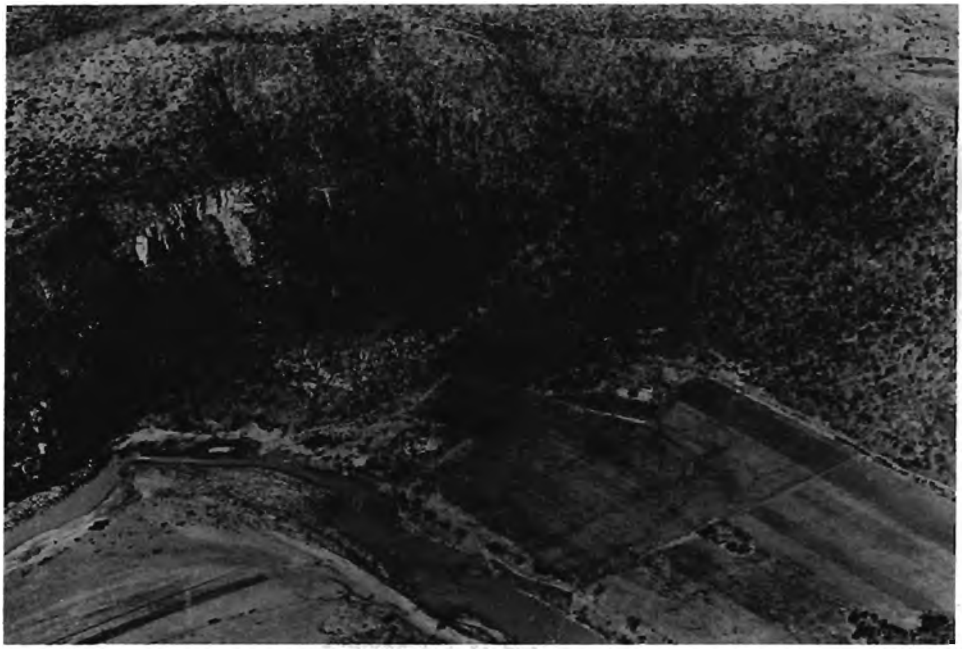

Fig. 4. Oblique air photograph looking southwards to Mabhija Site A, which is in the eroded area immediately left of the cultivation.

fragments. These seem to be essentially domestic middens and their occurrence beside and uphill from the stone enclosure suggests that this was the main living area. If so, there was clearly little separation of the smelting from other activities, since two of the furnace groups are nearby.

Another possible smelting area, with a small debris scatter and a sharpening stone occurs beside one of the essentially domestic scatters, which itself contains a large rock with signs of battering perhaps from use as an anvil. Several large sandstone grindstones, typical of terminal Iron Age sites such as Mgoduyanuka (Maggs 1982), together with their typical upper stones of both dolerite and sandstone attest to the grinding of grain on site. On the western edge of the site there is a rough ring of stones about 3 m in diameter containing the base of a large pot and some grindstones. This may be the remains of a hut and, if so, is the only one noted. A curved piece of stone walling uphill to the south may have been part of another stock pen.

Excavation was limited to the largest furnace group, where seven furnaces were visible initially, and the pair to the west, furnaces 8 and 9 (Fig. 5). With excavation the main group proved to have seven more (Nos 10–16), all fourteen being built in pairs which are arranged in two rows of four and one of six (Fig. 6). Furnace 1 is superimposed on 16 and uses the same bowl, but whereas 16 has a north–south orientation and is part of the 14, 13, 15 row, No. 1 is in an east–west orientation along with the rest of its row 12, 2 and 3.

The sixteen numbered furnaces are apparently typical of the area and are therefore used to define this furnace type. In plan they are elliptical and relatively

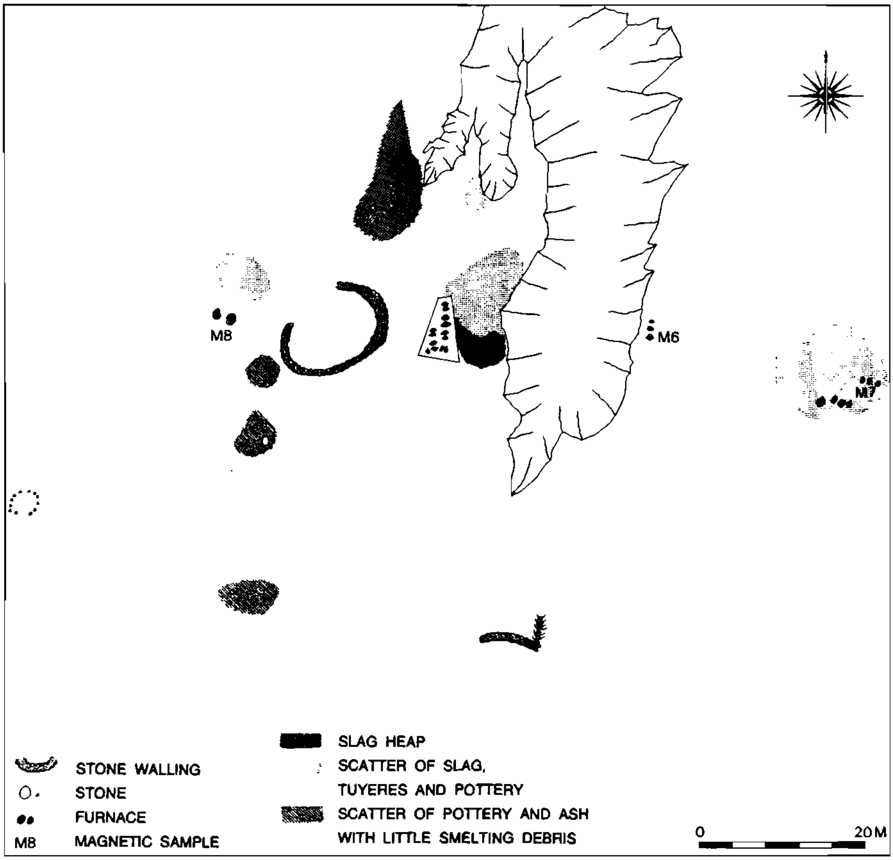
M8
M6
M7
SLAG HEAP
STONE WALLING
SCATTER OF SLAG, TUYERES AND POTTERY
STONE
FURNACE
SCATTER OF POTTERY AND ASH WITH LITTLE SMELTING DEBRIS
M8 MAGNETIC SAMPLE
0
20M

Fig. 5. Plan of Mabhija Site A.

small. They are essentially holes dug into the ground, in some cases with a little of the superstructure remaining. The best preserved, particularly Nos 1 and 4 are elongated in their upper portions with a spout-like opening at either end (Figs 6 & 7) for the tuyères. The bases of these spouts slope downwards suggesting that the tuyères may have pointed downwards at angles of around 30° from the horizontal, but none was recovered *in situ* to confirm this.

Dimensions of the sixteen furnaces are given in Table 1, the positions of the dimensions being indicated in Fig. 8. Size and shape are fairly standardised, as is shown by the relatively small standard deviations for length, width, depth and depth below spout (Table 1). Comparable figures on width and depth are available for the Hluhluwe furnaces (Hall 1980), where in both cases the means fall within one standard deviation of the Mabhija figures, showing that the furnaces are essentially the same. These results suggest that the standardised size/shape was important for successful smelting.

The question of paired furnaces was examined by measuring the distance between neighbours (DN), as well as the thickness of fire-hardened or reddened

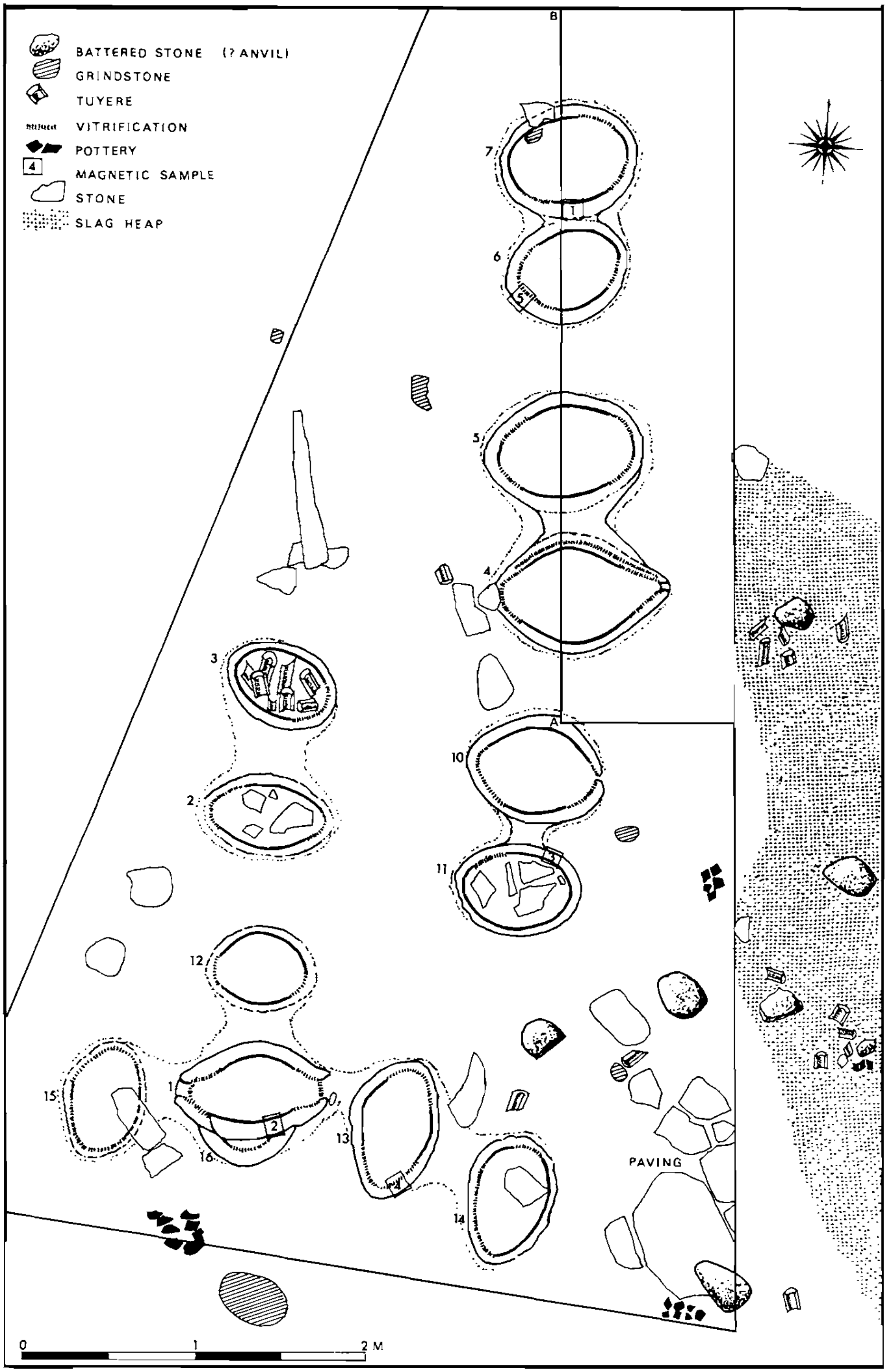
BATTERED STONE (? ANVIL)
GRINDSTONE
TUYERE
VITRIFICATION
POTTERY
4 MAGNETIC SAMPLE
STONE
SLAG HEAP
B
A
1
2
3
4
5
6
7
10
11
12
13
14
15
16
PAVING
0
1
2 M

Fig. 6. Plan of the main furnace group at Mabhija Site A. Broken lines show earth burnt red around furnaces.

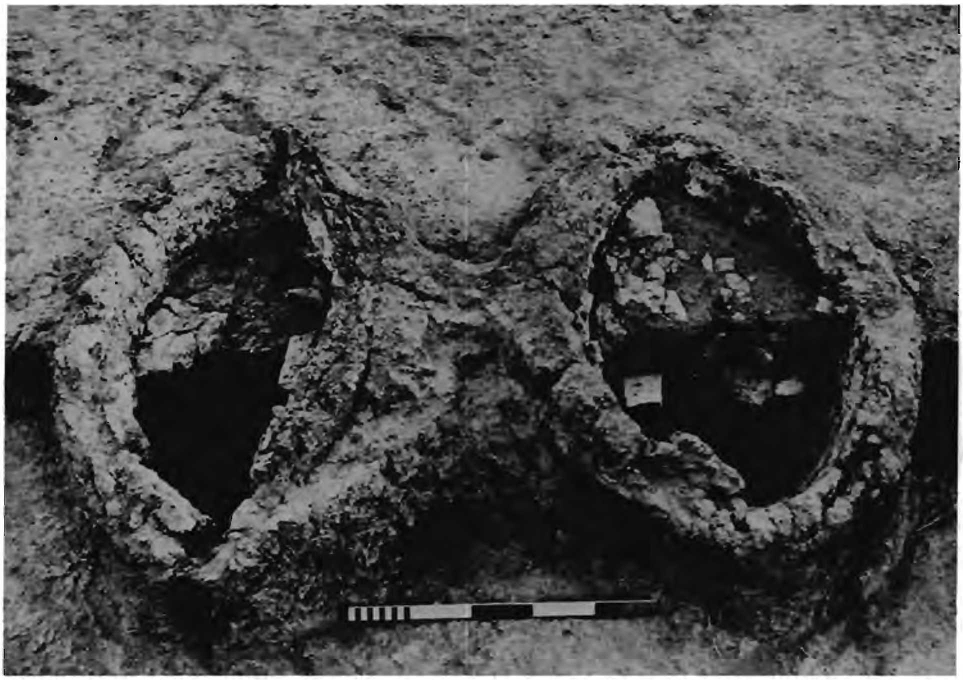

Fig. 7. Furnaces 4 and 5 with contents sectioned. Note spout-like extensions at either end of 4, evidence of relining along its right side and thickness of hard fired earth between the two, relative to the thinner outer walls, which indicates that the pair were fired simultaneously.

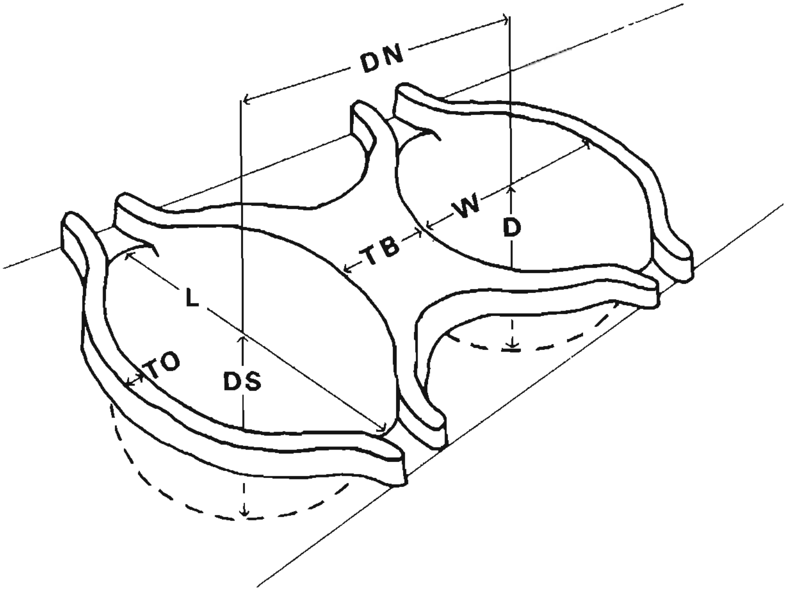

Fig. 8. Diagram of furnace pair to show dimensions used in Table 1. L—internal length of furnace bowl, W—internal width of bowl, D—depth of bowl from highest surviving part of wall, DS—depth of bowl below base of spouts, ie. position of tuyères, DN—distance from paired neighbour measured from centres of furnaces, TB—thickness of fired earth between paired neighbours, TO—thickness of fired outer wall.

TABLE 1

Furnace dimensions, in centimetres (abbreviations: E = one end, ES = both ends, S = side, SW = sandwich plastered over. For other abbreviations see Fig. 8).

Furnace No.	L	W	D	DS	DN	TB	TO	Vitrification
F1	67	39	54	30–35	74	34	11	ES, SW
F12	56	42	—	—			9	ES
F2	65	43	—	—	77	33	11	ES
F3	64	46	44	39			10	E
F4	73	41	46	29–35	84	43	14	ES, SW
F5	72	44	48	37			13	ES
F6	55	39	38	31	68	24	11	ES
F7	63	42	37	—			8	ES
F8	79	48	50	37	168	27	14	ES
F9	78	37	44	—			16	ES, S
F10	66	47	—	—	69	25	10	ES
F11	72	44	—	—			7	E
F13	66	36	—	—	76	42	11	ES
F14	62	35	—	—			10	ES, S
F15	62	35	—	—	86	46	11	ES, S
F16	60	45	42	35			12	E
Mean	66	41	45	34	88	34	11	
S.D.	7	4	5	3	33	9	2	
n	16	16	9	9	8	8	16	

earth between them (TB) and the thickness of the baked outer walls (TO). During excavation it appeared that there was a much greater thickness of fire-hardened earth between some furnaces than on their outsides (Figs 7 & 9). This suggested the hypothesis that pairs were fired simultaneously. The hypothesis was tested by checking if TB = TO × 2 which would be the case if each one of the pair was fired separately. The mean of TO × 2 at 22 cm is well short of the TB mean of 34 cm and outside its standard deviation (Table 1) thus confirming the hypothesis.

Distance between neighbours seems rather variable (standard deviation 33 cm) but examination of Table 1 shows that the isolated pair, furnaces 8 and 9, are much further apart than the other pairs. By excluding them DN falls to a mean of 76 cm with a standard deviation of only 7 cm indicating a more standardised pattern in the main smelting area. The 8–9 pair are so far apart that heat was unable to achieve the combined baking action seen between the other pairs. Here the TB consists of adding together the thickness of the two inner baked walls which were separated from one another by about a metre of unbaked earth, thus the TB at 27 cm is essentially the same as TO × 2 at 30 cm. Clearly in such cases, including the Hluhluwe furnaces, where DN is greater than about 1 m, it is not possible to establish that simultaneous firing took place. Yet this may well have been the case since they are still built in pairs.

The position of vitrification of the furnace linings was noted (Fig. 6 and Table 1) as it is not evenly distributed. As might be expected, the hottest parts of most furnaces were towards the ends, where the blast from the bellows had most effect. In a few cases vitrification had taken place along one or both sides. Two furnaces, Nos 1 and 4, had a layer of vitrification sandwiched between fire-hardened layers within their walls. This indicates that furnaces were used more than once and that they were sometimes relined with clay.

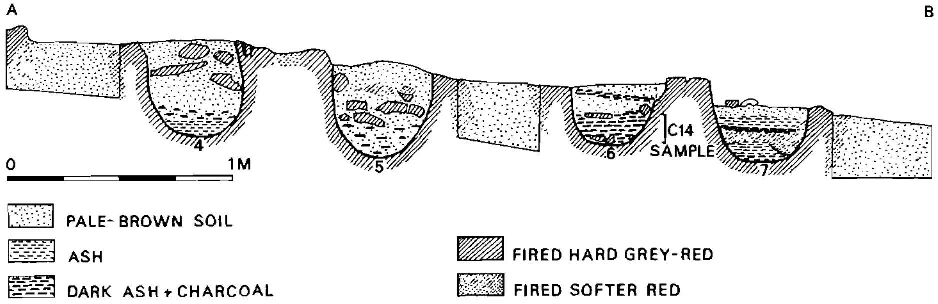

Fig. 9. Section through furnaces 4–7, for position see Fig. 6.

Although not all the furnaces were excavated down to their bases, the contents of those that were, do show some patterning. Most contain broken fragments of furnace wall in a matrix of pale brown soil, with a few centimetres of ash and charcoal at the bottom. This pattern, as exemplified by furnaces 4 and 5 (Fig. 9), suggests that after the last smelt they were not completely cleaned out and that subsequently they filled up as the upper portions of the walls collapsed and silt washed in. In several cases with this basic pattern, the furnace rubble was deliberately supplemented with stones (Nos 9, 11 & 14), potsherds (No. 13) and a mass of broken tuyères (No. 3). These cases of deliberate filling may have been intended to dispose of debris or to level off the now redundant hole.

There were three exceptions to this pattern, including furnace 15, which contained a charge that had been fired but perhaps unsuccessfully. This 'bloom' consists of a spongy mass of charcoal and iron which appears to be oxidised. The other exceptions, furnaces 6 and 7, show a more complicated stratigraphy than the others including the basal ash and evidence of ash and charcoal just below the surface silt (Fig. 9). Fires appear to have been burnt in them after the last smelt; it is therefore possible that they were used as forges for smithing the smelted metal.

The furnaces would not all have been in use at the same time. It seems likely that only one or two pairs would be in working order at a time. Assuming that furnaces in a row would be built and used consecutively and taking into consideration the superpositioning of No. 1 over No. 16 and the deliberate filling of Nos 2, 3, 10, 11 and 12 a sequence can be tentatively proposed. The 13–16 row was probably oldest, followed by 1, 12, 2 and 3 with 4–7, 10 and 11 last. The 4–5 and 6–7 pairs may have been the last in operation.

Apart from the furnaces themselves several other features of the main smelting area are of interest. Most of the working seems to have taken place in the area between the slag heap and neighbouring furnaces. Part of this area has a rough paving and there are several large dolerite rocks with signs of battering on their upper surfaces consistent with use as anvils. Most of the pottery was also from here and from furnace 13 nearby. A long narrow slab near furnace 3 seems to have been deliberately introduced but its purpose is unknown. The slag heap is the largest seen in the area, but being only about 20 cm deep is relatively insignificant, for example, compared to some from the Transvaal Lowveld (Van der Merwe & Killick 1979).

As part of an archaeomagnetic study undertaken by the Department of Archaeology, University of Cape Town (Henthorn *et al.*, 1979), samples of fired clay were taken from eight of the furnaces, the positions being indicated on Figs 5 and 6. It is hoped that archaeomagnetism may eventually produce greater precision than radiocarbon in dating terminal Iron Age sites, but results are not yet available.

A charcoal sample for radiocarbon dating was collected from the ash lense of furnace 6 (Fig. 9). The result, Pta-1699 115±50 (a.d. 1835), requires to be interpreted in terms of known fluctuations of atmospheric radiocarbon in recent centuries. Dr Vogel comments that the probable age is around A.D. 1690 or A.D. 1840.

THE FINDS

Pottery

There was insufficient pottery to merit a full description and analysis of the assemblage. However, enough was collected to demonstrate close resemblance to other terminal Iron Age sites in the Tugela Basin, notably Mgoduyanuka (Maggs 1982).

The ware is well fired, buff to orange in colour throughout, lacking the grey core so typical of grassland areas where dung was probably the fuel. Much of it has a coarse gritty temper of crushed shale but some is finer.

The five reconstructable vessels from Site A (Fig. 10) and three from sites in the Mabhija valley itself (Fig. 11) include four vessel types—U-shaped bowls, open-mouthed bowls, U-shaped pots and bag-shaped pots—typical of this period in the Tugela Basin. The lack of decoration and the relatively large proportion of red ochre burnish are other characteristics. There is indeed nothing stylistic about the collection to differentiate it from Mgoduyanuka, 60 km farther up the Tugela.

Tuyères

A notable feature of these sites is the thickness and resulting large outer diameter of the tuyères. They appear to be thicker than most Iron Age examples though their inner diameter or bore is not particularly large. The 31 larger pieces recovered from the excavated furnaces gave the following measurements which are compared with a seventh century Early Iron Age sample from the nearby site of Msuluzi Confluence (Maggs 1980).

Inner diameter in mm.	Smallest	Mean	Largest	Standard Deviation	n
Mabhija	28	37	50	6	31
Msuluzi Confluence	26	47	60	9	23
Thickness in mm.					
Mabhija	19	30	38	4	31
Msuluzi Confluence	9	14	19	3	23

The Mabhija tuyères are on average appreciably smaller in inner diameter and they are twice the thickness of the Early Iron Age sample. Another difference is that whereas the Mabhija tuyères were not fired prior to use, the EIA ones apparently were. The bellows ends of the former are missing and the baked parts

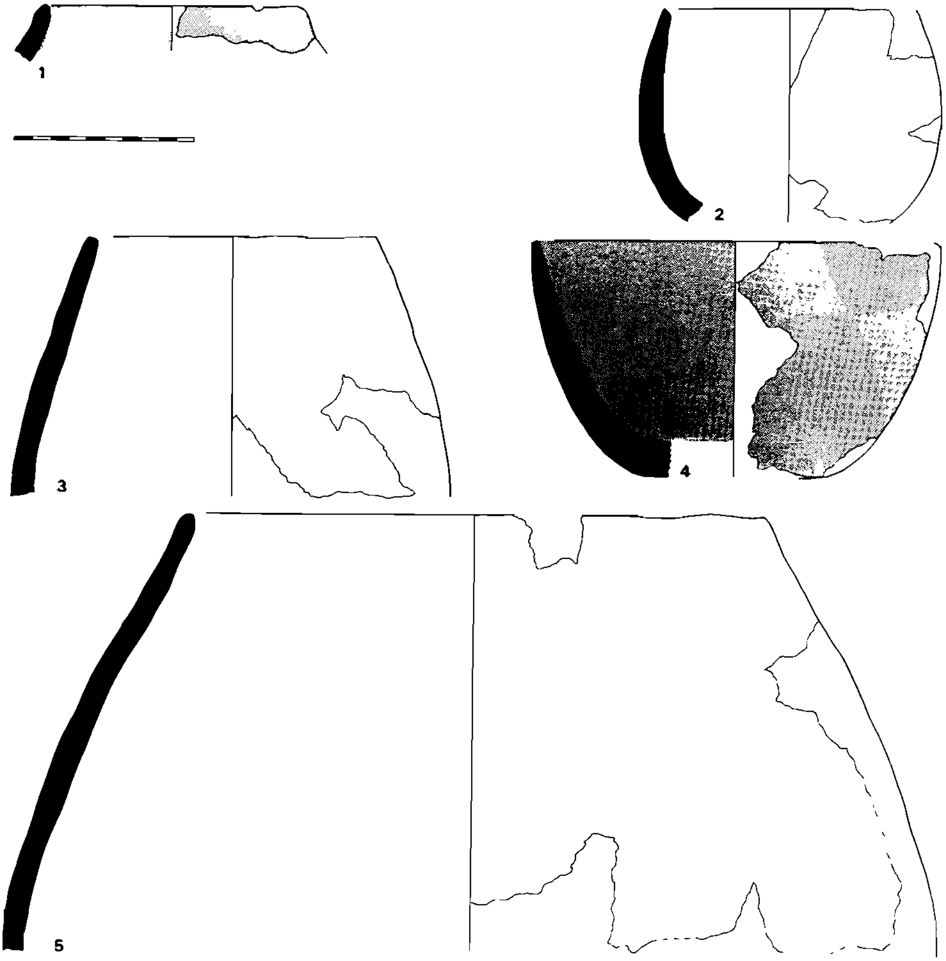

Fig. 10. Pottery from Mabhija Site A. 1. Small bag-shaped pot with ochre burnish from furnace 8. 2. U-shaped bowl from between furnaces 3 and 4. 3. Bag-shaped pot from near furnace 14. 4. Open-mouthed bowl with ochre burnish from furnace 11. 5. Large bag-shaped pot from furnace 13.

give way to increasingly soft and friable material away from the vitrified nozzles. Only one piece preserving the bellows end was recovered, this being a lightly fired, funnel-shaped piece from the Ramak site.

These contrasts between Early and Late Iron Age tuyères appear to be valid for Natal in general, and would seem to indicate different smelting traditions. The distinction is further evident in the lack of surviving furnaces at EIA sites, whereas they are so common in the LIA.

Iron implements

Several surface finds were collected by the Blewitt family prior to fieldwork. These include two adze or chisel-like objects, the tip of a blade and a fine awl probably used for sewing (Fig. 12). A knife or spear blade with its tang doubled over was found just south of the main smelting area.

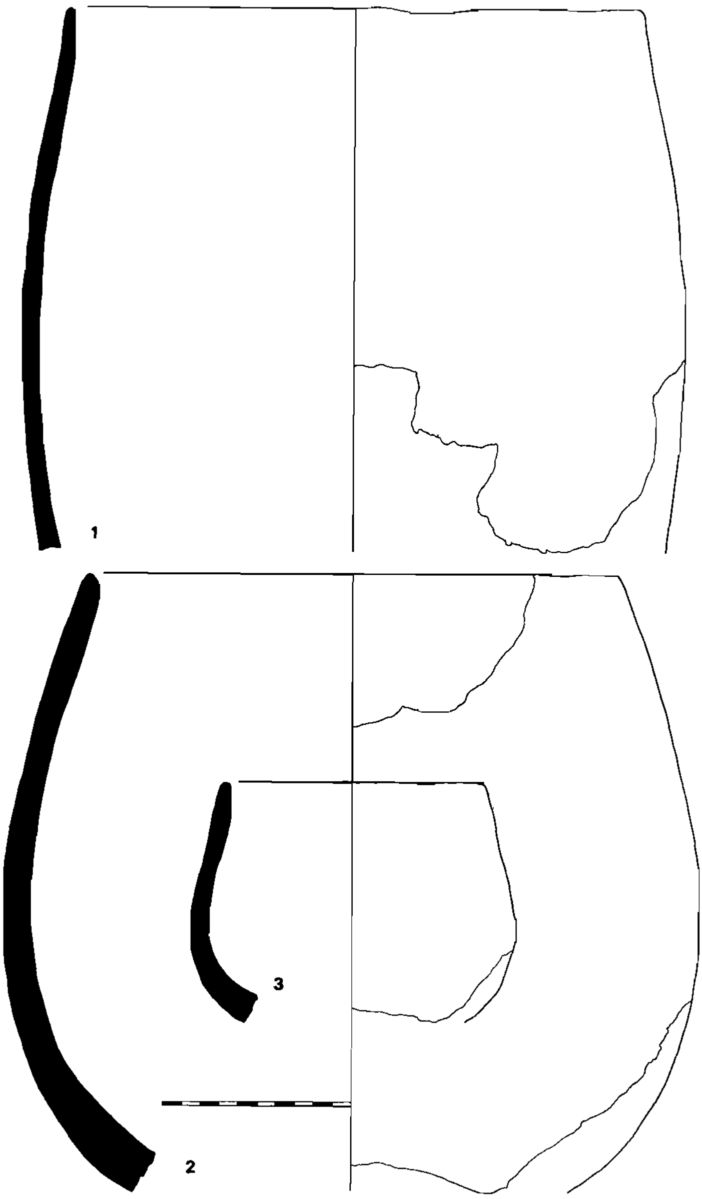

Fig. 11. Pottery from smelting areas in the Mabhija valley. 1. U-shaped pot. 2. Bag-shaped pot. 3. U-shaped bowl.

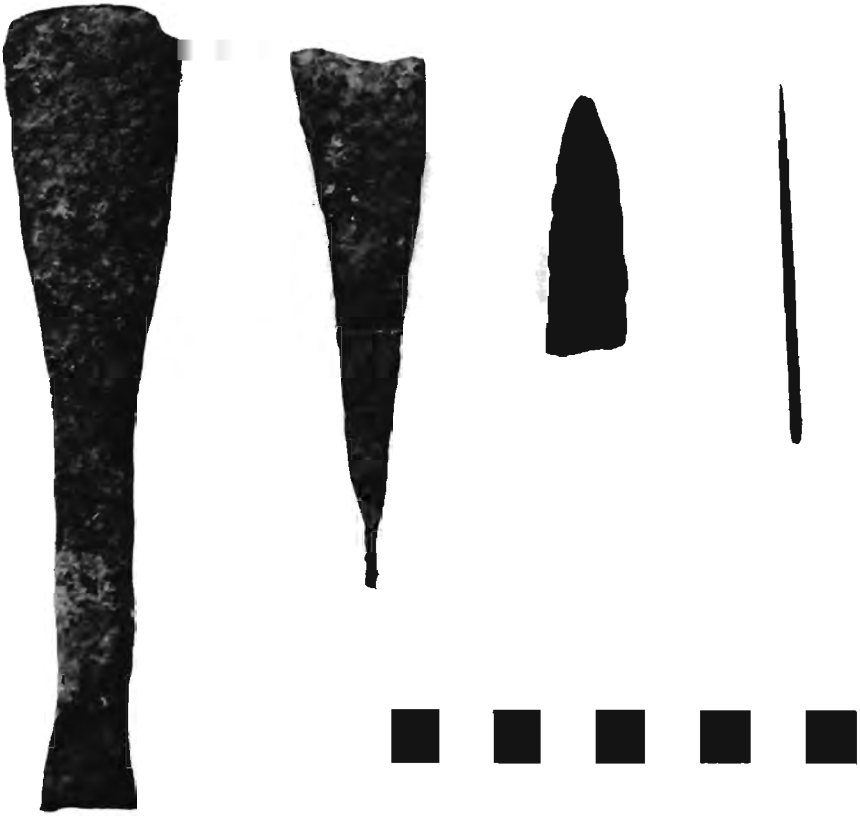

Fig. 12. Iron implements collected prior to our fieldwork. From the left—two chisel-like implements, perhaps worn down axes or adzes, tip of spear or knife blade, awl.

Stone items

Apart from items mentioned above two interesting finds had been collected prior to our visit. A smoking pipe carved out of soft stone carries a pattern of triangular lines (Fig. 13). A large flat sandstone slab has a series of shallow grooves ground into it, no doubt from the sharpening of iron implements (Fig. 14).

ORAL HISTORY

An important aspect of the fieldwork was the oral historical research carried out by J. B. Wright, Department of History, University of Natal. The main aim was to ascertain whether the Late Iron Age archaeological phenomenon of the smelting sites was within the time depth of the local community's memory, for there has been no previous documentary or oral historical record of iron working in this area. An additional aim was to recover traditional knowledge on utilisation of the local environment.

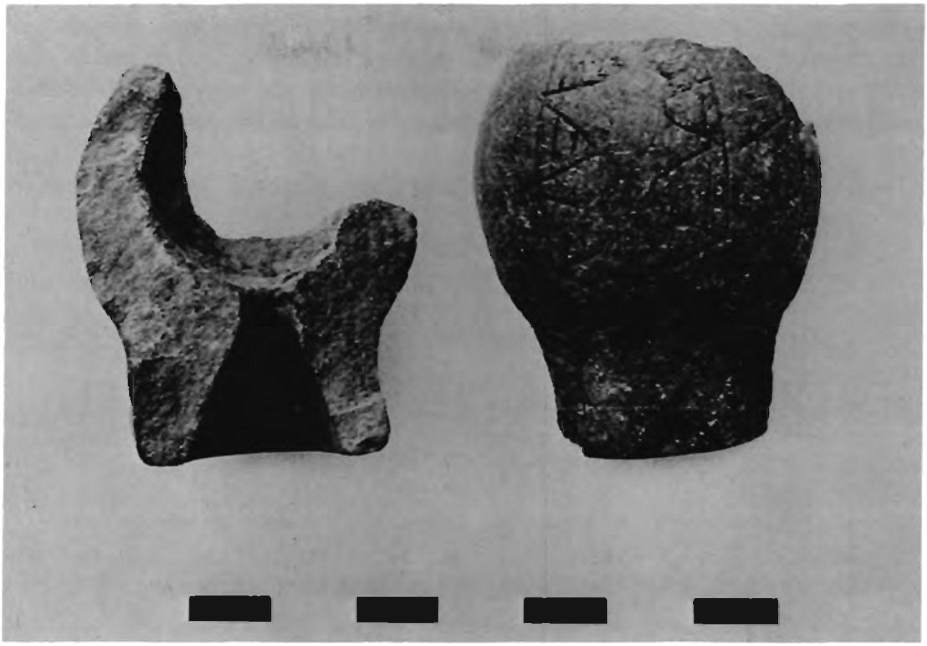

Fig. 13. Two pieces of a carved stone smoking pipe showing hourglass perforation (left) and triangular pattern on exterior of bowl (right) (Blewitt Collection).

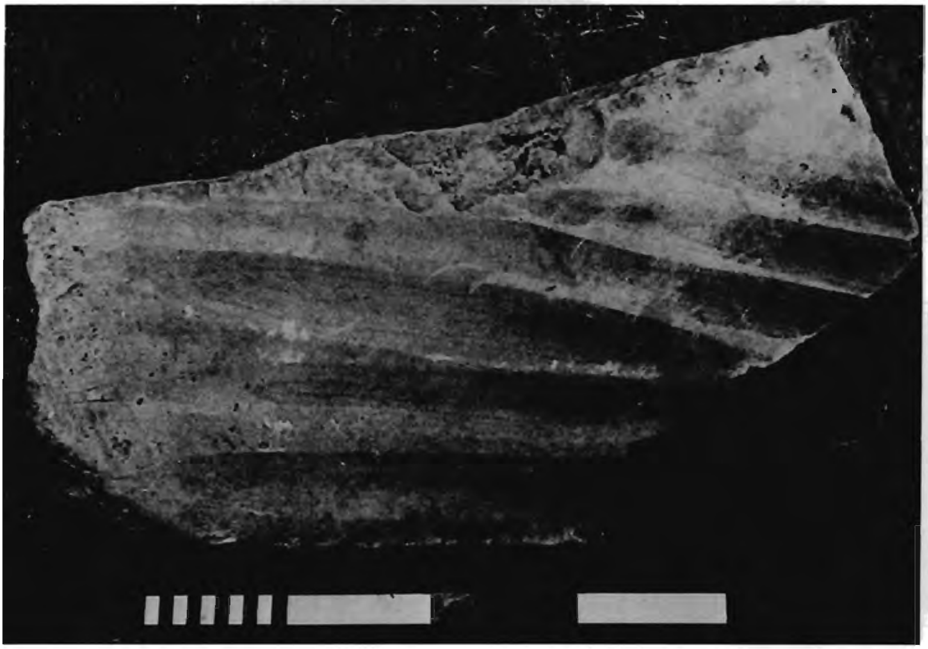

Fig. 14. Sandstone slab with broad shallow grooves ground on both sides, presumably from the sharpening of iron implements.

Interviews were held with three main informants. Madaphu Gamede who was born about 1902 and grew up near Mdanyana (Fig. 1). Muziwabantu Sithole, an elderly man born in the 1880s, had only moved to the area after the Second World War, but he showed a remarkable memory in his ability to recite the *izibongo* (praise poems) of his clan's chiefs back to that of Jobe Sithole of Shaka's time. Judah Mbhele, the youngest, born about 1916 is at least the second generation of his family to live in the area.

Gamede said that iron working in the Mabhija valley was carried out by the Ntolo Dlamini. Bryant (1929) has the Tolo people living some distance farther south around the upper Mooi and Bushmans rivers, with no specific group mentioned in the Mabhija area. However, the area put forward by Bryant is a high altitude, acid environment well beyond the limits of concentrated Late Iron Age settlement and it was occupied by San in the early nineteenth century (Vinnicombe 1976, Wright 1971). It therefore seems likely that Bryant's attribution relates to a stage in the Tolo movement southwards during the Mfecane, rather than any long-term settlement in pre-Mfecane times.

Sithole had heard from old people that the smelting was done by people of Chief Dweba of the Dlamini Zizi. According to Bryant (1929), the area fell between the Zizi territory to the west, and that of the Dlamini proper to the south. The three groups including the Tolo were closely related Dlamini peoples and it is probable that there were metal workers among each. On present evidence, therefore, it is not possible to conclude more precisely than that one of these Dlamini peoples was responsible for the Mabhija iron-working industry.

Little information was forthcoming on the smelting process itself, though Mbhele said that two trees were used for fuel, *umnqumo* (*Olea africana*—wild olive) and *umthombothi* (*Spirostachys africana*—tamboti). Mbhele also said that when the ore was heated 'dirt' would be drawn out of it and the iron would remain—a fair description of the bloomery process.

On the organisation of the industry Gamede had the following to say: 'Not all people were iron-workers, just as today not all people are store-keepers, but one man will have a store in one place and another man a store some distance away. The Ntolo made iron articles like spear blades and hoes with shanks. These they used as money, trading them to the local peoples in return for *izimvu* (fat-tailed sheep), for food such as *amabele* (sorghum) and for cattle and goats' (the latter two mentioned after a prompt from the interviewer).

Mbhele confirmed that hoes and spear blades were produced as well as double-headed axes. He did not know about trade but thought that a group of people (*inkampane*, *ibandla*) would have come together to produce these goods.

Mbhele showed us the area of quarrying and mining on the south side of the Mabhija valley (Fig. 1) and said there was another mine higher up near Mdanyana Hill. His grandmother had told him that the Mabhija mines had been used as game pits by subsequent inhabitants of the valley.

The same informant showed us the entrance to an old coal-mine in the valley and said his father told him that the smiths had mined the coal and used it mixed with wood for iron working. The mine was no longer in use when, as a boy, he had played near its entrance. Sithole also claimed that the coal-mine had been dug by blacks, not whites, though he did not know precisely who they were. He also claimed that the coal had been used for iron working.

Since uncoked coal cannot be used for iron smelting this claim seems unlikely. However, the persistence of local belief in pre-colonial coal mining is of interest and could be valid.

There was no memory of what happened to the iron-working communities, but informants agreed that the industry had died out when the whites introduced plentiful metal goods. Gamede recalled that a smith, Manyosi Mvelase, had still been living on the Msuluzi (Bloukrans) some 15 km to the south, when he was a child.

CONCLUSIONS

Mabhija presents a pattern of a specialised iron-working community that was clearly producing far in excess of local requirements. Furthermore, the dense concentration of Late Iron Age sites stands in stark contrast to the environment with its limited potential for the basic Iron Age subsistence activities of cultivation and herding. The explanation for this dense settlement lies in the availability of high quality iron ore in combination with an adequate supply of hardwood suitable for reduction to the necessary charcoal fuel for smelting. The system of exchange necessary to sustain this specialised production is outlined in the local oral traditions, though detailed archaeological confirmation would require further work.

The Mabhija community was part of a Dlamini Nguni chieftainship, one of several closely related groups probably the Tolo or Zizi. Most of these people were driven out of the Tugela Basin and dispersed during the Mfecane of the 1820s. Iron smelting never recovered from these events and the subsequent influx of cheap European metal goods, though some smithing continued, using imported metal.

The Mabhija pattern of specialist production stands as a model for other parts of Natal, where resources of both ore and timber are available. The smelting tradition, as represented by the type of furnace, extends from the Tugela northwards at least as far as the Mfolosi and Hluhluwe rivers, but evidently not as far as the eastern Transvaal Lowveld. Within the Tugela Basin there seems to have been a ring of such communities fringing the savanna core of the basin, near the grassland ecotone. Much of this fringe coincides with the Middle Ecca outcrop, though other sources of ore were also used.

Work on charcoals from Site A furnaces, to identify the tree species from which they come, is being carried out by the Department of Archaeology at the University of Stellenbosch. Although final results are not yet available some preliminary remarks can be made. Most, if not all, the charcoal seems to be from one *Acacia* species, either *A. caffra*, *A. ataxacantha* or *A. burkei*. Conclusive identification awaits further work on *Acacia* reference material, but the present evidence favours *A. caffra*.

If the charcoal identification is confirmed, the ecology of *A. caffra* becomes of considerable interest as a potential factor influencing the location of smelting sites. It is a frequently occurring tree in both the Interior *A. karroo–A. nilotica* Thorn Veld and in the higher altitude, mesic margins of the Semi-deciduous Bush

(Edwards 1967). These ecological zones coincide with most of the smelting sites of the Tugela Basin including Mabhija. The distribution of *A. caffra* may therefore have been a factor influencing the apparent ring-like location of the smelting industry as mentioned above.

Neighbouring grassland regions, through lack of charcoal, could not produce their own iron and were therefore a natural market for the industry. They were also densely settled in Late Iron Age times and demand must therefore have been considerable. The quantity and range of ironwork at just one site in the north-central Orange Free State, Makgwareng (Maggs 1976), points to the volume of this trade.

Confirmation that at least some of the Highveld ironwork came from our area is available from recorded oral history. The Fokeng, Tlokoa and other Sotho peoples of the southern Highveld obtained hoes and other items from the Zizi in exchange for cattle (Ellenberger 1912). The Mabhija community was ideally situated to take part in this trade and must have been heavily dependent on it for their survival.

ACKNOWLEDGEMENTS

Thanks are due to the Blewitt and Odendaal families for permission to carry out the fieldwork; those who helped in the field including M. Cherry, E. Franklin, M. Michael, P. Waugh and students from the University of Natal; J. Wright and the three informants for the historical information; K. Mack, T. Mthwethwa and V. Ward for help in preparing this report; L. van Schalkwyk and A. Scholtz of the Department of Archaeology, University of Stellenbosch, for their work on charcoal identification, and the Human Sciences Research Council and Natal Museum for funding the research.

REFERENCES

BRYANT, A. T. 1929. *Olden times in Zululand and Natal.* London: Longmans, Green & Co.

COETZEE, C. B. *ed.*, 1976. *Mineral resources of the Republic of South Africa*, Fifth edition. Pretoria: Geological Survey.

EDWARDS, D. 1967. *A plant ecological survey of the Tugela Basin.* Pietermaritzburg: Natal Town & Regional Planning Commission.

ELLENBERGER, D. F. 1912. History of the Basuto: ancient and modern. London: Caxton.

HALL, M. J. 1980. An iron-smelting site in the Hluhluwe Game Reserve, Zululand. *Ann. Natal Mus.* **24** (1): 165–175.

HENTHORN, D. I., PARKINGTON, J. & REID, R. C. 1979. An archaeomagnetic study of Mgungundlovu. *South African Archaeological Society, Goodwin Series.* **3**: 149–153.

HOBDAY, D. K. 1973. Middle Ecca deltaic deposits in the Muden–Tugela Ferry area of Natal. *Trans. Geol. Soc. S. Afr.* **76** (3): 309–318.

MAGGS, T. M. O'C. 1976. *Iron Age communities of the southern Highveld.* Pietermaritzburg: Natal Museum.

——— 1980. Msuluzi Confluence: a seventh century Early Iron Age site on the Tugela River. *Ann. Natal Mus.* **23** (1): 111–146.

——— 1982. Mgoduyanuka: terminal Iron Age settlement in the Natal grasslands. *Ann. Natal Mus.* **25** (1): 83–113.

VAN DER EYK, J. J., MACVICAR, C. N. & DE VILLIERS, J. M. 1969. *Soils of the Tugela Basin.* Pietermaritzburg: Natal Town & Regional Planning Commission.

VAN DER MERWE, N. J. & KILLICK, D. J. 1979. Square: an iron smelting site near Phalaborwa. *South African Archaeological Society, Goodwin Series* **3**: 86–93.

VINNICOMBE, P. 1976. *People of the Eland.* Pietermaritzburg: Natal University Press.

WRIGHT, J. B. 1971. *Bushman raiders of the Drakensberg 1849–1870.* Pietermaritzburg: Natal University Press.

Date received: 30 March 1982.